

## **REMARKS**

### **Claim Rejections - 35 U.S.C. § 102:**

Claims 1-3 are rejected under 35 U.S.C. § 102(b) as lacking novelty and as being anticipated by Sullivan, et al. (U.S. Patent No. 5,886,078), hereinafter '078 Patent. Specifically, the Examiner opines that the Sullivan '078 Patent disclosed polymeric compositions that are suitable for the production of members for use as carbroad ties and lumber (Col. 1, lines 5-67), and that such compositions were taught as comprising thermoplastic polymer, rubbery polymer, and mica in relative amounts that overlap those in the current application. Applicants respectfully traverse the Examiner's rejections on the basis that the composition, method of producing the members, and the features of the members disclosed in the instant application are novel improvements and are distinguishable from issued claim 1, and the teachings of the '078 Patent.

The claims have been amended to specify that the composite in the application is used for molding and molding applications whereas the '078 Patent was the use of such composite in extrusion and was directed to an member formed by extrusion into a die. Also, while the '078 Patent requires mica as a reinforcing filler, the new application discloses a variety of fillers which could be used. Next, because of improvements in the invented mixing technology disclosed in the application, it is not necessary to limit the size of the rubbery polymeric component such that about 90% by-weight will not pass through a hundred mesh screen. Further, Applicants have amended their claims by modifying the ranges of percentages of mixture of the thermoplastic polymer.

Further, the mixing and molding technology used in this application was not even known at that time of the filing of the earlier application and has taken years and millions of dollars to develop. This invention uses a different mixing mechanism, and the molding

process gives the tie different characteristics than the extruded tie or member.

The mixing process is also superior to that disclosed in the '078 Patent. The mixing in the '078 Patent was accomplished by an extruder. In this invention, Applicants use an open chamber Banbury mixer to mix the components. This allows formulation of a more homogeneous mixture which is also preferred since ingredients can be added at different stages, similar to making a cake. This is especially advantageous since the fillers are preferably added near the end of the mixing stage. Also, if a foaming mixture is used, the open chamber allows the mixture to expand. Now the extruder is used to pump the mixture as part of the injection process, rather than to mix.

The Examiner further contends that the final articles of manufacturer regarding extrusion and molding processes are also taught in Column 8 lines through 12 of the '078 Patent. However, the '078 Patent disclosed a traditional extrusion device and process. Extrusion is the "act or process of extruding" and extrude is defined as "[t]o shape (metal or plastic, for example) by forcing through a die." *See, e.g., The American Heritage Dictionary.*

Moreover, the method of injection molding, using an extruder in conjunction with a piston and/or gear and/or brake was not known or disclosed in the '078 Patent. While the process disclosed in lines 11-12 of Column 8 refers to injection and compression molding, as by molding a member by compressive forces, there are no teachings of any specific way to mold the tie out of such materials and at that time, the inventors did not know how to achieve molding with those materials. In the invention of the '078 Patent, the extruded material flowed through a die and made a member which was substantially the shape of the die and was of unlimited length. Upon exiting the die, the extruded member was directly placed in a cooled water bath where it hardened, and was pulled out of the die by rollers, or a similar type of pulling device, very similar to the traditional way that pipe is made. Subsequently, the

member of unlimited length was sawed to size, thereby forming a somewhat imprecise end product. In contrast, the newly invented molding process, using a newly invented mold, gives the tie different characteristics than the extruded tie or member.

More specifically, another unique feature of the invention is solving the problem of uniformly filling a long mold. Due to the nature of a long mold, it is nearly impossible – if not impossible -- to keep a constant density as material is introduced into a long mold, because the pressure varies, and the internal friction along the inside of the mold varies. In order to control the density and ensure consistent integrity of the molded member, which is related to the strength of the member, the invention preferably uses a piston, brake and gearing, in conjunction with an extruder during the filling of the mold. There is also preferably a tail stop at the end of the mold opposite to the end which is being filled which provides a controllable back pressure. Rather than filling an empty cylindrical mold, a very small space is filled near or up against the face of the piston plate, and the piston is continually being moved away from the filled portion of the mold, preferably by a gear and a brake, which exerts resistance, which may also be preprogrammed to keep a constant pressure and density as the whole mold is filled. This enables the formation of a more precise member, with more uniform characteristics. Molding, as disclosed in this application, allows formation of a member of a precise length and size, with a more consistent density and uniformity, preferably in individual molds.

Furthermore, the apparatus for “molding” such a member was not known or disclosed at the time of the prior application. The apparatus and method also provides that the ties are capable of being molded on a continual basis, but need not be produced on a continual basis. Further, the invented method discloses the ability to divert the flow from one mold into another mold preferably through a diverter valve.

Additionally, Applicants invented a cooling method for the molded member, wherein the member is taken out of the mold before the interior is cool. The member is then placed on a rack and rotated periodically to prevent warping.

Applicants respectfully traverse the Examiner's Claim rejections on the basis that the Sullivan, et al, '078 Patent and claims possess features and limitations not disclosed or claimed in that prior patented invention. Applicants also respectfully traverse the Examiner's rejection because no single prior art reference, i.e., here the '078 Patent, discloses every limitation cited in the claim. A claim is anticipated only if each and every element set forth in the claim(s) are found, either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). Further, the "identical invention must be shown in as complete detail as contained in the claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). It is not. Therefore, the newly presented claims are patentable.

#### **CONCLUSION**

For the reasons submitted, Applicants respectfully submit that the added, unamended, and the amended claims are patentable and completely overcome the Examiner's 35 U.S.C. 102 claim rejections, and that the Applicants' claims define novel structure and function, which is also unobvious. Again, not all elements of Applicants' invention are disclosed by the '078 Patent, thus Applicants' invention is not anticipated by the '078 Patent. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d at 631.

Therefore, Applicants submit that these claims and amendments now place this application in condition for allowance. If the Examiner is of the opinion that the claims are not in condition for allowance then the Examiner is respectfully encouraged to contact the undersigned in order that this Application can be placed in allowable condition as soon as

possible and without the need for further proceedings.

Respectfully submitted,

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Date

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**ATTACHMENT A (Marked up claims)**

**CLAIMS:**

1. (Once Amended) An individually or substantial individually molded member for use as a railroad tie, lumber or other structural member, comprising a mixture of:
  - from about [4%] 25% to about 55% of a thermoplastic polymer[.];
  - from about 4% to about 55% of a rubbery polymeric component; and[.]
  - from about 4% to about 55% of a reinforcing filler[.];
  
2. (Once Amended) A process for forming a molded member for use as a railroad tie, lumber or other structural member, comprising the steps of:
  - mixing materials comprising,
    - from about [4%] 25% to about 55% of a thermoplastic polymer[.];
    - from about 4% to about 55% of a rubbery polymeric component; and[.]
    - from about 4% to about 55% of a reinforcing filler;
  - injecting or extruding said mixture into a mold having at least one side [wall], said mixture at least partially fill[s]ing said mold [about said side wall], such that said mixture has at least one side surface [along said side wall] and an interior portion;
  - cooling said mixture whereby said at least one side surface is at least partially hardened[.]; thereby at least partially forming a member;
  - removing said [mixture] member from said mold before said interior portion [of said mixture] is substantially hardened;
  - placing said [mixture] member within or about a cooling apparatus; and
  - rotating said [mixture] member about said cooling apparatus whereby said [mixture] interior is at least substantially hardened [forming said member].
  
6. (Once Amended) The method of Claim 2 wherein said materials each comprise from about [4%] 25% to 55% of said mixture.
  
8. (Once Amended) The method of claim 2 where in said mixture is heated by frictional and/or compressive heating of said mixer.

10. (Once Amended) The method of Claim [2] 9 wherein said mixture is heated [from] to about 380 degrees to about 440 degrees.

11. (Once Amended) The method of Claim [2] 8 wherein said mixture is preferably heated [from] to about 400 degrees to about 420 degrees.

12. (Once Amended) An apparatus comprising:  
a mold having at least one [a] side wall defining an interior portion and an injector port whereby an extrudable material may be injected [across] through said injection port into said mold[,];  
a member [located about said mold] whereby said member is in sealable connection about said interior portion [of said side wall,];  
said member capable of moving along said interior portion of said [side wall] mold whereby said member may adjustably control a density of said extrudable material.

13. (Once Amended) A process for forming a molded member for use as a railroad tie, lumber or other structural member, comprising the steps of:  
mixing [,] portions from about [4%] 25% to about 55% of a thermoplastic polymer,  
with from about 4% to about 55% of a rubbery polymeric component;  
[and,]  
with from about 4% to about 55% of a reinforcing filler[;] until said portions form a flowable mixture; and  
[and injecting] feeding said mixture into a mold having at least one side wall, said mixture at least partially fill[s]ing said mold [about said side wall], such that said mixture has at least one side surface [along said side wall] and an interior portion.

14. (Once Amended) A polymeric composite for usage in molding applications comprising:  
a thermoplastic polymer component comprising recycled polyolefin, recycled copolymers thereof or combinations thereof[;] and comprising about 25% to about 55% of

said composite;

a recycled rubbery polymeric component comprising about 4% to about 55% of said composite; [ and,]

a recycled reinforcing filler component[.] comprising about 4% to about 55% of said composite; and

a foaming agent comprising less than 1% of said composite.

15. (Once Amended) A molded member for use as a railroad tie, lumber or other structural member, comprising:

a mixture of

from about [4%] 25% to about 55% of a thermoplastic polymer[.];

from about 4% to about 55% of a rubbery polymeric component; [and,]

from about 4% to about 55% of a reinforcing filler; and

wherein said member is rotated at least once during cooling.

[wherein said member has at least one textured surface, whereby the said textured surface is applied by a press.]

16. (Once Amended) A process for forming a member having a plurality of surfaces, for use as a railroad tie, lumber or other structural member, comprising the steps of:

mixing,

[from] about [4%] 25% to about 55% of a thermoplastic polymer[.];

[from] about 4% to about 55% of a rubbery polymeric component; [and],

[from] about 4% to about 55% of a reinforcing filler;

injecting said mixture into a mold having at least one [side] wall, wherein said mixture at least partially fills said mold about said [side] wall, such that said mixture has at least one side surface along said [side] wall and an interior portion;

cooling said mixture whereby said at least one [side] surface is at least partially hardened thereby at least partially forming a member;

removing said [mixture] member from said mold before said interior portion [of said mixture] is substantially hardened;

placing said [mixture] member about a cooling apparatus



rotating said [mixture] member about said cooling apparatus whereby said interior [mixture] is at least substantially hardened [forming said member]; and [applying a textured surface to] texturing at least one surface of said member.

17. (Once Amended) A process for forming a member having a plurality of surfaces and at least one textured surface, for use as a railroad tie, lumber or other structural member, comprising the steps of:

[molding said member from] preparing a mixture of:

[from] about [4%]25% to about 55% of a thermoplastic polymer,  
[from] about 4% to about 55% of a rubbery polymeric component; [and],  
[from] about 4% to about 55% of a reinforcing filler; [and]  
forming a member by molding; and  
texturing at least one surface of said member.

18. (Added) An apparatus comprising:  
a mold having at least one side wall defining an interior portion and an opening  
whereby material may fed into said mold;

a member in sealable connection about said interior portion;  
wherein member is capable of moving along said interior portion of said mold  
whereby said member may adjustably control a density of said extrudable material.

19. (Added) The apparatus of Claim 18, wherein said controlling member  
comprises a back pressure piston.

20. (Added) The apparatus of Claim 18, wherein said member that adjustably  
controls a density comprises a piston.

21. (Added) The apparatus of Claim 20, wherein said member further comprises at  
least one gear and/or at least one brake.

22. (Added) The apparatus of Claim 20, further comprising a mechanical valve to

shut off the flow of said material.

23. (Added) The apparatus of Claim 22, further comprising a tail stop and/or sensor to indicate when said valve should shut.

24. (Added) The apparatus of Claim 18, further having a mold with at least one end, wherein said mold further comprises a rod on or about said at least one end.

25. (Added) The apparatus of Claim 24, wherein said end and rod are pushed outwardly as the mold fills and the rod is detected by the sensor when said mold is filled.

26. (Added) The apparatus of Claim 18, further comprising a means to shut off the flow of said injected material when said mold is filled or substantially filled and a means to divert said material to another mold that is not filled.

27. (Added) The apparatus of Claim 26, wherein said means comprises a diverter valve.

28. (Added) The apparatus of Claim 27, wherein said means further comprises a first diverter station and a second diverter station.

29. (Added) The process of Claim 13, further comprising the step of using a Banbury mixer or other open chamber mixer to mix said mixture.

30. (Added) The process of Claim 13, further comprising the step of using a valve to feed said mixture into said mold.

31. (Added) The process of Claim 29, further comprising the step of using an extruder between said Banbury mixer or other open chamber mixer and said valve to transport said mixture to said valve.

32. (Added) The process of Claim 13, further comprising the step of using a plurality of molds to form a plurality of members.

33. (Added) The process of Claim 31, further comprising the step of adjustably controlling a density of said extrudable material.

34. (Added) The process of Claim 33, wherein at least one brake and/or at least one gear is used to control said density.

35. (Added) The process of Claim 13, further comprising the step of using a plurality of molds and filling at least one mold at a time.

36. (Added) The apparatus of Claim 35, further comprising the step of using a first diverter station one and a second diverter station to fill at least one mold at a time.

37. (Added) The process of Claim 13, further comprising the step of cooling said mixture whereby said at least one side surface is at least partially hardened thereby at least partially forming a member.

38. (Added) The process of Claim 13, further comprising the step of closing the mold after it is filled.

39. (Added) The process of Claim 38, further comprising the step of placing the closed mold in a waterbath during cooling.

40. (Added) The process of Claim 39, further comprising the step of: removing said member from said mold before said interior portion is hardened.

41. (Added) The process of Claim 40, further comprising the steps of: placing said member within or about a cooling apparatus; and rotating said member about said cooling apparatus until said interior of said member

is at least substantially hardened and/or cooled.

42. (Added) The process of Claim 41, further comprising the step of: texturing at least one surface of said member.

43. (Added) The member of Claim 15, wherein said rotation prevents said member from warping during cooling

44. (Added) The member of Claim 15, wherein said member has at least one textured surface, whereby said textured surface is applied by a press.

45. (Added) The member of Claim 44, wherein said member is a tie having at least one textured surface with indentations at least 1/8" deep.

46. (Added) The member of Claim 44, wherein said member is a tie having a textured surface with indentations that provide surfaces perpendicular to the longitudinal axis of the tie.

47. (Added) The member of Claim 44, wherein said member is a tie having a textured surface with indentations at least 1/4" wide, but less than 6" wide.

48. (Added) The member of Claim 44, wherein said member is a tie having a textured surface and wherein the pattern provides corners or holes to capture and hold individual pieces of ballast.

49. (Added) The member of Claim 47, wherein said member is a tie having a textured surface and wherein said indentations provide resistance to force across at least 10% of said tie surface.

50. (Added) The composite of Claim 14, wherein a Banbury mixer or other open chamber mixer is used to mix said composite

51. (Added) The apparatus of Claim 12, wherein said member that adjustably controls a density of said extrudable material comprises a piston.

52 (Added) The apparatus of Claim 51, wherein said member that adjustably controls a density of said extrudable material further comprises at least one gear and at least one brake.

53.. (Added) The apparatus of Claim 12, further comprising:  
a means to shut off the flow of said injected material when said mold is filled or substantially filled.

54. (Added) The apparatus of Claim 53, wherein said means comprises a mechanical valve.

55. (Added) An apparatus for making a molded member comprising:  
a Banbury mixer or other open chamber mixer for mixing materials;  
at least one mold that has sides and ends that can be closed;  
an extruder for filling said mold with said mixed material;  
a member that adjustably controls a density of said material as the mold is filled;  
a valve to shut off the flow of said mixed material when said mold is filled;  
a tail stop and/or sensor to indicate when said valve should shut; and  
a water bath for cooling said mold or molds.

56. (Added) The apparatus of Claim 55, further comprising:  
a plurality of molds.

57. (Added) The apparatus of Claim 55, further comprising a means to shut off the flow of said injected material when at least on mold is filled or substantially filled and a means to divert said material to a mold that is not filled.

58. (Added) The apparatus of Claim 55, wherein said means comprises a diverter

valve.

59. (Added) The apparatus of Claim 58, wherein said means further comprises a first diverter station one and a second diverter station.

60. (Added) The apparatus of Claim 55, wherein said mold further comprises a rod which extends from one end of said mold and is pushed outwardly as said mold is filled.

61. (Added) The apparatus of Claim 60, wherein said rod is detected by a sensor when said mold is full.

62. (Added) The apparatus of Claim 61, wherein said sensor causes the mold to close.

63. (Added) The apparatus of Claim 62, further having means to put the mold into the water bath and means to take the mold out of the waterbath.

64. (Added) The apparatus of Claim 60, having means to push said rod inwardly and push the member out of the mold after said member is formed.

65. (Added) The apparatus of Claim 66, further comprising a cooling rack.

66. (Added) The apparatus of Claim 65, further comprising a texturing member.

67. (Added) The apparatus of Claim 55, wherein said controlling member comprises at least one gear and at least one brake.

**ATTACHMENT B (Clean Copy Claims)**

**CLAIMS:**

- Sub B1
1. An individually or substantially individually molded member for use as a railroad tie, lumber or other structural member, comprising a mixture of:
    - from about 25% to about 55% of a thermoplastic polymer;
    - from about 4% to about 55% of a rubbery polymeric component; and
    - from about 4% to about 55% of a reinforcing filler.
  2. A process for forming a molded member for use as a railroad tie, lumber or other structural member, comprising the steps of:
    - mixing materials comprising,
      - from about 25% to about 55% of a thermoplastic polymer;
      - from about 4% to about 55% of a rubbery polymeric component; and
      - from about 4% to about 55% of a reinforcing filler;
    - injecting or extruding said mixture into a mold having at least one side, said mixture at least partially filling said mold, such that said mixture has at least one side surface and an interior portion;
    - cooling said mixture whereby said at least one side surface is at least partially hardened, thereby at least partially forming a member;
    - removing said member from said mold before said interior portion of said mixture is substantially hardened;
    - placing said member within or about a cooling apparatus; and
    - rotating said member about said cooling apparatus whereby said interior is at least substantially hardened.
  3. The method of Claim 2 wherein said thermoplastic polymer is comprised of at least one of the materials selected from the group of materials consisting essentially of recycled polyolefins, recycled bucket resin, recycled drum resin, densified film, recycled grocery bags, electric wire coating, and recycled bottle resin or any combination thereof.

4. The method of Claim 2 wherein said rubbery component is comprised of at least one of the materials selected from the group of materials consisting essentially of crumb rubber, automotive fluff, tire belt fluff, carpet backing, rubber backing and recycled circuit boards or any combination thereof.

5. The method of Claim 2 wherein said reinforcing filler is comprised of at least one of the materials selected from the group of materials consisting essentially of carbon black, fly ash, mica, fiberglass, aragonite, crushed concrete, sand and crushed glass or any combination thereof.

A2 Sub B1 cont. → 6. The method of Claim 2 wherein said materials each comprise from about 25% to 55% of said mixture.

7. The method of claim 2 wherein said thermoplastic polymer and rubbery components comprise at least 20% of said mixture.

A3 Sub B1 cont. → 8. The method of claim 2 where in said mixture is heated by frictional and/or compressive heating of said mixer.

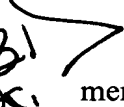
9. The method of Claim 2 wherein said mixture is at least partially heated by an external heat source.

A4 Sub B1 cont. → 10. The method of Claim 9 wherein said mixture is heated to about 380 degrees to about 440 degrees.

11. The method of Claim 8 wherein said mixture is preferably heated to about 400 degrees to about 420 degrees.

12. An apparatus comprising:  
a mold having at least one side wall defining an interior portion and an injector port whereby an extrudable material may be injected through said injection port into said mold;  
a member whereby said member is in sealable connection about said interior portion;



Sub B1  
cont.  said member capable of moving along said interior portion of said mold whereby said member may adjustably control a density of said extrudable material.

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cont. 13. A process for forming a molded member for use as a railroad tie, lumber or other structural member, comprising the steps of:

mixing portions from about 25% to about 55% of a thermoplastic polymer,  
with from about 4% to about 55% of a rubbery polymeric component;  
with from about 4% to about 55% of a reinforcing filler until said  
portions form a flowable mixture; and  
feeding said mixture into a mold having at least one side wall, said mixture at  
least partially filling said mold, such that said mixture has at least one side surface and an  
interior portion.

14. A polymeric composite for usage in molding applications comprising:  
a thermoplastic polymer component comprising recycled polyolefin, recycled  
copolymers thereof or combinations thereof and comprising about 25% to about 55% of said  
composite;

a recycled rubbery polymeric component comprising about 4% to about 55%  
of said composite;

a recycled reinforcing filler component comprising about 4% to about 55% of  
said composite; and

a foaming agent comprising less than 1% of said composite.

15. A molded member for use as a railroad tie, lumber or other structural member,  
comprising:

a mixture of

from about 25% to about 55% of a thermoplastic polymer;

from about 4% to about 55% of a rubbery polymeric component;

from about 4% to about 55% of a reinforcing filler; and

wherein said member is rotated at least once during cooling.

Sub B1  
cont.  
A4  
cont.

16. A process for forming a member having a plurality of surfaces, for use as a railroad tie, lumber or other structural member, comprising the steps of:

mixing,

about 25% to about 55% of a thermoplastic polymer;

about 4% to about 55% of a rubbery polymeric component;

about 4% to about 55% of a reinforcing filler;

injecting said mixture into a mold having at least one wall, wherein said mixture at least partially fills said mold about said wall, such that said mixture has at least one side surface along said wall and an interior portion;

cooling said mixture whereby said at least one surface is at least partially hardened thereby at least partially forming a member;

removing said member from said mold before said interior portion is substantially hardened;

placing said member about a cooling apparatus

rotating said member about said cooling apparatus whereby said interior is at least substantially hardened; and

texturing at least one surface of said member.

17. A process for forming a member having a plurality of surfaces and at least one textured surface, for use as a railroad tie, lumber or other structural member, comprising the steps of:

preparing a mixture of:

about 25% to about 55% of a thermoplastic polymer,

about 4% to about 55% of a rubbery polymeric component;

about 4% to about 55% of a reinforcing filler;

forming a member by molding; and

texturing at least one surface of said member.

A5

18. An apparatus comprising:  
a mold having at least one side wall defining an interior portion and an opening whereby material may fed into said mold;

a member in sealable connection about said interior portion;  
wherein member is capable of moving along said interior portion of said mold  
whereby said member may adjustably control a density of said extrudable material.

19. The apparatus of Claim 18, wherein said controlling member comprises a back pressure piston.

20. The apparatus of Claim 18, wherein said member that adjustably controls a density comprises a piston.

21. The apparatus of Claim 20, wherein said member further comprises at least one gear and/or at least one brake.

22. The apparatus of Claim 20, further comprising a mechanical valve to shut off the flow of said material.

23. The apparatus of Claim 22, further comprising a tail stop and/or sensor to indicate when said valve should shut.

24. The apparatus of Claim 18, further having a mold with at least one end, wherein said mold further comprises a rod on or about said at least one end.

25. The apparatus of Claim 24, wherein said end and rod are pushed outwardly as the mold fills and the rod is detected by the sensor when said mold is filled.

26. The apparatus of Claim 18, further comprising a means to shut off the flow of said injected material when said mold is filled or substantially filled and a means to divert said material to another mold that is not filled.

27. The apparatus of Claim 26, wherein said means comprises a diverter valve.

28. The apparatus of Claim 27, wherein said means further comprises a first diverter station and a second diverter station.

29. The process of Claim 13, further comprising the step of using a Banbury mixer or other open chamber mixer to mix said mixture.

30. The process of Claim 13, further comprising the step of using a valve to feed said mixture into said mold.

31. The process of Claim 29, further comprising the step of using an extruder between said Banbury mixer or other open chamber mixer and said valve to transport said mixture to said valve.

32. The process of Claim 13, further comprising the step of using a plurality of molds to form a plurality of members.

33. The process of Claim 31, further comprising the step of adjustably controlling a density of said extrudable material.

34. The process of Claim 33, wherein at least one brake and/or at least one gear is used to control said density.

35. The process of Claim 13, further comprising the step of using a plurality of molds and filling at least one mold at a time.

36. The apparatus of Claim 35, further comprising the step of using a first diverter station and a second diverter station to fill at least one mold at a time.

37. The process of Claim 13, further comprising the step of cooling said mixture whereby said at least one side surface is at least partially hardened thereby at least partially forming a member.

Sub B1  
cont.

38. The process of Claim 13, further comprising the step of closing the mold after it is filled.

39. The process of Claim 38, further comprising the step of placing the closed mold in a waterbath during cooling.

40. The process of Claim 39, further comprising the step of:  
removing said member from said mold before said interior portion is hardened.

41. The process of Claim 40, further comprising the steps of:  
placing said member within or about a cooling apparatus; and  
rotating said member about said cooling apparatus until said interior of said member is at least substantially hardened and/or cooled.

42. The process of Claim 41, further comprising the step of: texturing at least one surface of said member.

43. The member of Claim 15, wherein said rotation prevents said member from warping during cooling

44. The member of Claim 15, wherein said member has at least one textured surface, whereby said textured surface is applied by a press.

45. The member of Claim 44, wherein said member is a tie having at least one textured surface with indentations at least 1/8" deep.

46. The member of Claim 44, wherein said member is a tie having a textured surface with indentations that provide surfaces perpendicular to the longitudinal axis of the tie.

47. The member of Claim 44, wherein said member is a tie having a textured

Sub B1  
cont.  
surface with indentations at least 1/4" wide, but less than 6" wide.

48. The member of Claim 44, wherein said member is a tie having a textured surface and wherein the pattern provides corners or holes to capture and hold individual pieces of ballast.

49. The member of Claim 47, wherein said member is a tie having a textured surface and wherein said indentations provide resistance to force across at least 10% of said tie surface.

50. The composite of Claim 14, wherein a Banbury mixer or other open chamber mixer is used to mix said composite

51. The apparatus of Claim 12, wherein said member that adjustably controls a density of said extrudable material comprises a piston.

52. The apparatus of Claim 51, wherein said member that adjustably controls a density of said extrudable material further comprises at least one gear and at least one brake.

53. The apparatus of Claim 12, further comprising a means to shut off the flow of said injected material when said mold is filled or substantially filled.

54. The apparatus of Claim 53, wherein said means comprises a mechanical valve.

55. An apparatus for making a molded member comprising:  
a Banbury mixer or other open chamber mixer for mixing materials;  
at least one mold that has sides and ends that can be closed;  
an extruder for filling said mold with said mixed material;  
a member that adjustably controls a density of said material as the mold is filled;

a valve to shut off the flow of said mixed material when said mold is filled;  
a tail stop and/or sensor to indicate when said valve should shut; and  
a water bath for cooling said mold or molds.

56. The apparatus of Claim 55, further comprising:  
a plurality of molds.

57. The apparatus of Claim 55, further comprising a means to shut off the flow of said injected material when at least on mold is filled or substantially filled and a means to divert said material to a mold that is not filled.

58. The apparatus of Claim 55, wherein said means comprises a diverter valve.

59. The apparatus of Claim 58, wherein said means further comprises a first diverter station and a second diverter station.

60. The apparatus of Claim 55, wherein said mold further comprises a rod which extends from one end of said mold and is pushed outwardly as said mold is filled.

61. The apparatus of Claim 60, wherein said rod is detected by a sensor when said mold is full.

62. The apparatus of Claim 61, wherein said sensor causes the mold to close.

63. The apparatus of Claim 62, further having means to put the mold into the water bath and means to take the mold out of the waterbath.

64. The apparatus of Claim 60, having means to push said rod inwardly and push the member out of the mold after said member is formed.

65. (Added) The apparatus of Claim 66, further comprising a cooling rack.

66. (Added) The apparatus of Claim 65, further comprising a texturing member.

67. (Added) The apparatus of Claim 55, wherein said controlling member comprises at least one gear and at least one brake.

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